CLAIMS

1. A fuel cell system comprising:

a fuel cell (1) which generates electrical power by causing hydrogen and oxygen to react;

a hydrogen supplying device (2) which supplies hydrogen to the fuel cell (1);

a temperature adjustment mechanism (4) which adjusts a temperature of the fuel cell (1) by causing a heating medium to flow into the fuel cell (1);

a burner (5) which generates high-temperature combustion gas by burning hydrogen;

a heat exchanger (6) which warms the fuel cell (1) during a cold start-up operation by providing the heating medium with the heat of the combustion gas such that the heating medium is heated; and

a hydrogen purging mechanism (13) which causes gas inside the hydrogen supplying device (2) to flow into the burner (5),

wherein, when hydrogen purging is executed by the hydrogen purging mechanism (13), the combustion gas generated by the burner (5) is discharged toward at least one of a site at which the heating medium flows without stopping and a site at which the heating medium is not present.

2. The fuel cell system as defined in Claim 1, further comprising a heat exchanger bypass mechanism (21) which discharges the combustion gas without causing the combustion gas to flow through the heat exchanger (6),

wherein, when hydrogen purging is executed by the hydrogen purging mechanism (13), the combustion gas is discharged by the heat exchanger bypass mechanism (21) so as to bypass the heat exchanger (6).

3. The fuel cell system as defined in Claim 1, further comprising:

a heat exchanger bypass passage (22) through which the heating medium flows so as to bypass the heat exchanger (6); and

a heating medium passage switching mechanism (17) which switches the heating medium passage between the heat exchanger (6) side and the heat exchanger bypass passage (22) side,

wherein, if the heating medium passage switching mechanism (17) has set the heating medium passage to the heat exchanger bypass passage (22) side when hydrogen purging is to be executed by the hydrogen purging mechanism (13), a predetermined amount of the heating medium is caused to flow to the heat exchanger (6) side by the heating medium passage switching mechanism (17).

4. The fuel cell system as defined in Claim 1, further comprising:

a heat exchanger bypass passage (22) through which the heating medium flows so as to bypass the heat exchanger (6); and

a heating medium passage switching mechanism (17) which switches the heating medium passage between the heat exchanger (6) side and the heat exchanger bypass passage (22) side,

wherein, if the heating medium passage has been set to the heat exchanger bypass passage (22) side by the heating medium passage switching mechanism (17) when hydrogen purging is to be executed by the hydrogen purging mechanism (13), hydrogen purging is executed after the heating medium passage is switched to the heat exchanger (6) side by the heating medium passage switching mechanism (17).

5. The fuel cell system as defined in Claim 4, wherein, if the heating medium passage has been set to the heat exchanger bypass passage (22) side by the heating medium passage switching mechanism (17) when hydrogen purging is to be executed by the hydrogen purging mechanism (13), hydrogen purging is prohibited until the heating medium flows to the heat exchanger (6) side.

6. The fuel cell system as defined in Claim 5, further comprising:

a cooling mechanism (18) which cools the heating medium in the heat exchanger bypass passage (22); and

a cooling ability adjustment mechanism (16, 19) which adjusts the cooling ability of the cooling mechanism (18),

wherein, if the heating medium passage has been set to the heat exchanger bypass passage (22) side by the heating medium passage switching mechanism (17) when hydrogen purging is to be executed by the hydrogen purging mechanism (13), the cooling ability of the cooling mechanism (18) is raised by the cooling ability adjustment mechanism (16, 19) such that the heating medium is rapidly cooled below a predetermined temperature, whereupon the heating medium passage is switched to the heat exchanger (6) side by the heating medium passage switching mechanism (17) and hydrogen purging is performed by the hydrogen purging mechanism (13).

7. The fuel cell system as defined in Claim 5, wherein, if the heating medium passage has been set to the heat exchanger bypass passage (22) side by the heating medium passage switching mechanism (17) when hydrogen purging is to be executed by the hydrogen purging mechanism (13), a selection is made according to the urgency of hydrogen purging to either switch the heating medium passage to

the heat exchanger (6) side and then perform hydrogen purging, or to prohibit purging.

8. The fuel cell system as defined in Claim 7, wherein, if hydrogen purging is required urgently, the heating medium passage is switched to the heat exchanger (6) side by the heating medium passage switching mechanism (17) and hydrogen purging is performed.

9. The fuel cell system as defined in Claim 8, wherein, if the need to perform hydrogen purging urgently disappears during hydrogen purging, the heating medium passage is switched to the heat exchanger bypass passage (22) side by the heating medium passage switching mechanism (17) and hydrogen purging is prohibited.

10. The fuel cell system as defined in Claim 7, wherein purging is prohibited when there is no need to perform hydrogen purging urgently.

11. The fuel cell system as defined in Claim 7, further comprising:

a cooling mechanism (18) which cools the heating medium in the heat exchanger bypass passage (22); and

a cooling ability adjustment mechanism (16, 19) which adjusts the cooling ability of the cooling mechanism (18),

wherein hydrogen purging is prohibited when there is no need to perform hydrogen purging urgently,

after which the cooling ability of the cooling mechanism (18) is raised by the cooling ability adjustment mechanism (16, 19) such that the heating medium

temperature is cooled rapidly below a predetermined temperature, the heating medium passage is switched to the heat exchanger (6) side by the heating medium passage switching mechanism (17), and hydrogen purging is then permitted.

12. The fuel cell system as defined in any one of Claim 7 through Claim 11, wherein a determination is made as to whether or not hydrogen purging is required urgently on the basis of a cell voltage of the fuel cell (1).

13. The fuel cell system as defined in any one of Claim 7 through Claim 11, wherein a determination is made as to whether or not hydrogen purging is required urgently on the basis of an operating time of the fuel cell (1).

14. The fuel cell system as defined in any one of Claim 7 through Claim 11, wherein a determination is made as to whether or not hydrogen purging is required urgently on the basis of an operating load of the fuel cell (1).

15. The fuel cell system as defined in any one of Claim 7 through Claim 11, wherein a determination is made as to whether or not hydrogen purging is required urgently on the basis of a duration of hydrogen purging in the fuel cell (1).

16. The fuel cell system as defined in Claim 6 or Claim 11, wherein the cooling mechanism (18) is a radiator, and the cooling ability adjustment mechanism is a pump (16) which increases the flow of heating medium passing through the radiator (18).

17. The fuel cell system as defined in Claim 6 or Claim 11, wherein the cooling

mechanism (18) is a radiator, and the cooling ability adjustment mechanism is a fan (19) which increases the amount of air passing through the radiator (18).